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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,168	03/31/2004	Michael M. Albert	1857.2390000/MVM/CMB	4453
26111	7590	07/28/2006	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			CONSILVIO, MARK J	
			ART UNIT	PAPER NUMBER

2872

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,168

Applicant(s)

ALBERT ET AL.

Examiner

Mark Consilvio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-23, 26 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-23, 26 and 28-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/29/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/29/2006 has been entered.

Status of Claims

Claims 18-32 were previously rejected and claim 18 is newly amended. Claims 24, 25, and 27 have been cancelled. Claims 18-23, 26 and 28-32 are currently pending.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 06/29/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

Claims 28-32 are objected to because of the following informalities: The status of claims 28-32 have been incorrectly identified as “(New)” but should be correctly identified as “(Previously Presented).” Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18, 22, 23, 26, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Flagello et al. (US Patent No. 6,943,941).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

With respect to claims 18 and 26, Flagello discloses an lithography apparatus (1) comprising: (a) a source (LA) producing a light beam having at least one wavelength within the UV spectrum; (b) a mask (MA); (b) a substrate (24) transparent to light in the UV spectrum and disposed in a path of the light beam; and (d) an array of wire element elements (22) on the substrate; wherein the array of elements are divided into wedge-shaped groups having parallel wire elements therein to polarize incident UV light and output light that is tangentially polarized, with respect to the cylindrical symmetry of the polarizer wherein adjacent wedge-shaped groups

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are separated by a boundary extending from a perimeter of the polarizer to a center of the polarizer and an array of elements (30) are patterned on the substrate to produce radially polarized light (figs.1-3).

With respect to claim 22, Flagello discloses the substrate includes fused silica, calcium fluoride, sapphire, quartz, or magnesium fluoride (col. 10, lines 55-67).

With respect to claim 23, Flagello discloses the UV light comprises at least two polarizations and wherein the elements generally reflect most incident light of a first polarization direction and transmit most of the light of a second polarization direction (col. 10, lines 45-54).

With respect to claim 31, Flagello discloses the elements may include aluminum, silver or gold (col. 10, lines 55-67).

With respect to claim 32, Flagello discloses the incident UV light is substantially unpolarized since the light source of Schuster produces unpolarized light (col. 10, lines 45-54).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-23, 26, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuster (US Patent Application Publication No. 2002/0176166) in view of Hansen et al. (US Patent Application Publication No. 2002/0167727) and in further view of Niz'yev (Russian Patent Publication No. 2,166,819)

With respect to claims 18 and 26, Schuster discloses an lithography apparatus comprising: (a) a source (51) producing a light beam having at least one wavelength within the UV spectrum; (b) a mask (57); (b) a substrate (63) transparent to light in the UV spectrum and disposed in a path of the light beam; and (d) an array of polarizing elements composing the substrate; wherein the array of elements are arranged in a pattern around the optical axis of the polarizer and divided into groups of elements to polarize incident UV light and output a tangentially polarized light, with respect to the cylindrical symmetry of the polarizer, toward the mask. Schuster does not expressly disclose an array of wire elements on the substrate; wherein the array of elements are divided into wedge-shaped groups having parallel wire elements therein to polarize incident UV light and output light that is tangentially polarized, with respect to the cylindrical symmetry of the polarizer wherein adjacent wedge-shaped groups are separated by a boundary extending from a perimeter of the polarizer to a center of the polarizer or that the array of elements are patterned on the substrate to produce radially polarized light.

However, Hansen teaches that birefringent crystal prism polarizers like that of Schuster are expensive and have a number of undesirable qualities for many exacting optical systems. Also, Hansen teaches that wire grid polarizers can cure many of these deficiencies by providing polarizing system that is thinner and causes less attenuation, that is less expensive, that has broader angular acceptance, and that is more efficient. Further, Hansen discloses that a plurality of parallel wire elements may be arranged to produce the desired polarization orientation and therefore provides the additional advantage of being integrated into a single element that can utilize unpolarized light. Though Hansen does not teach that wire grid polarizers are known to be use in conjunction with ultraviolet light, it is well known in the art that the spacing between

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the wire elements can be adjusted to adequately polarize particular wavelength regions. Hansen also does not specifically teach the array of wire elements are divided into wedge-shaped groups having parallel wire elements therein to output light that is tangentially polarized or the array of wire elements produce radially polarized light.

However, Niz'yev discloses a wire grid polarizer that outputs tangentially polarized light with respect to the cylindrical symmetry of the polarizer wherein a array of wire elements are divided into wedge-shaped groups having parallel wire elements therein and wherein adjacent wedge-shaped groups are separated by a boundary extending from a perimeter of the polarizer to a center of the polarizer (fig. 3) and discloses a wire grid polarizer that outputs radially polarized light (fig. 4).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Schuster and Hansen to replace the birefringent array and polarizer of Schuster with a wire grid polarizer like that of Niz'yev arranged to provide tangentially or radially polarized light to obtain the benefits of a wire grid polarizer as taught by Hansen and Niz'yev.

With respect to claims 19-21 and 28-30, the combination as set forth supra does not expressly disclose the pitch, period, or thickness of the elements. However, it is well known in the art that only certain parameters pertaining to the wire grid polarizer will effectively polarize ultraviolet light. For example, one of ordinary skill would understand that a pitch of about one quarter of a wavelength of the UV light is desirable so that higher orders of diffraction are not created by the wire grid polarizer. Likewise, a period of between about 45 nm and 95 nm and a thickness of between approximately 0.04 and 0.3 μm would be required for system making use

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of ultraviolet light around 193nm. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to provide the required features for use in the lithographic system as taught by Shuster.

With respect to claim 22, Schuster discloses the birefringent array includes fused silica, calcium fluoride, sapphire, quartz, or magnesium fluoride (par. 22). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use such a material for the wire grid substrate since it is well known that these materials are transparent in the ultraviolet region of light.

With respect to claim 23, the combination as taught above discloses the UV light comprises at least two polarizations and wherein the elements generally reflect most incident light of a first polarization direction and transmit most of the light of a second polarization direction.

With respect to claim 31, as noted above though Shuster is silent to wire elements, Hansen discloses the elements may include aluminum, silver or gold. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use such a material for the wire grid substrate since it is well known that these materials are effective polarizing elements, are readily available, and can be apply according to a variety of methods to produce such small elements.

With respect to claim 32, the combination discloses the incident UV light is substantially unpolarized since the light source of Schuster produces unpolarized light.

Response to Arguments

Applicant's arguments with respect to claims 18-23 have been considered but are moot in view of the new ground(s) of rejection.

In addition, it is noted that in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Consilvio whose telephone number is (571) 272-2453. The examiner can normally be reached on Monday thru Friday, 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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